Strategic Planning for Information Management: What Are the Deliverables?

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ABSTRACT

This paper describes the deliverables framework developed by Vanderbilt University Medical Center (VUMC) in its IAIMS planning process. The key deliverables include: visions for the future; mission, goals, and objectives for the information management function; critical functions for IAIMS; categorized projects; priority recommendations; and a straw man project sequence reflecting dependencies. The paper also discusses how the plan will be used and how it interacts with direction-setting for the Medical Center.

INTRODUCTION

Vanderbilt University Medical Center (VUMC) is in the second generation of sites selected by the National Library of Medicine for the development of Integrated Advanced Information Management Systems (IAIMS).[1] Planning related to first-generation IAIMS projects has been reported in a variety of forums.[2,3] The initial structure and processes adopted by VUMC's Information Policy Advisory Committee (IPAC) to conduct IAIMS planning were described in 1993.[4] Over the course of the planning process, IPAC has identified a number of deliverables that we believe will facilitate institutional commitment to act on the resulting plan.[5] This paper describes each deliverable and explains its purpose in the development of our strategic plan for information management. We also discuss how we will use the resulting plan, its expected evolution, and its relationship to the setting of strategic directions for the Medical Center.

DELIVERABLES

Vision Statements

IPAC requires a vision of the future: how does VUMC expect to be meeting its missions in five to ten years? What is the most attractive, realistic vision for VUMC's patient care services in the year 2000? What about education? research? administration? How can information technology enable new processes and products? In order to develop a strategic plan for information management, we must have a clear target and understanding of our needs. The visioning process opens up the opportunity to explore discontinuous paradigm shifts. Without such a vision, an IAIMS planned today would be out of date before it could be completed.

Foundations for visioning. The creation of vision statements built on two foundational exercises to develop understanding of our external motivations to change and our current strategic directions.

The first task of our planning groups was to identify the external pressures facing the domains of education, research, patient care, and administration. In the past year VUMC has felt acute pressure to position itself to participate in a new managed care environment and to adapt to decreasing indirect cost rates. However, other environmental factors are also important. It is vital to understand the broad environmental context to anticipate future demands and opportunities and to understand our motivations for change.

Using a combination of brainstorming, discussion, and synthesis, each group created a list of external pressures. Then, using an affinity analysis process, we developed eight statements which incorporated all of the pressures identified across all of the groups. These external pressures cut two ways: they represent opportunities, as well as presenting challenges. We then derived a succinct list of necessary paradigm shifts implied by the external pressures. The external pressures are presented in Table 1.

A second task was to identify changes that VUMC is currently making. Each group put together a list of key on-going change initiatives. These initiatives represent current strategic directions or responses to perceived threats or opportunities. As with the external pressures, the lists were combined and grouped across domains.

Types of Vision Statements. We have produced three kinds of vision statements: statements listing attributes, a variety of scenarios, and two videos.

First, IPAC asked the planning groups to identify probable attributes of their domains in the next five to ten years, based on their understanding of our external pressures and the changes we might make in engaging those pressures.

Second, each group was asked to write one or more scenarios to provide an experience of the domain in

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the future. They were asked to consider what kinds of work we might be doing in the future, how we might do it, and how information technology might enable or support that future work. These scenarios were written from varying points of view: e.g., describing the experience of a patient, an administrator, a faculty member, an investigator, a learner. After reviewing the scenarios across the four domains, several features stood out; they are listed in Table 2.

Table 1: External Pressures

1. The condition of our **national and international economy and the impact of rising health care costs on our economy** are driving changes in funding and organization for patient care, research, and education.
2. **Changing demographics, lifestyles, and socio-economic factors** affect our patient, student, and faculty/staff populations.
3. **Pressures to collaborate and manage across a wide variety of settings**, e.g., through managed care, telemedicine, inter-disciplinary and inter-institutional research, out-sourcing, information sharing, and educational consortia, are increasing in concert with the evolution of new organizational structures and technologies which enable collaboration and management across settings.
4. Similarly, we are experiencing increasing **pressures to monitor, measure, evaluate, and change based on data** as new technologies and processes enable us to respond to these requirements.
5. **Continuous advances in information and communications technologies** require continual learning and adaptation, call us to reassess our processes dynamically, and foster competitive pressure to meet standards and expectations for information management.
6. **Increasing emphasis on prevention and primary care and focus on the patient's role in managing his/her health, disease, and recovery** affect practice, education, and research priorities.
7. **Changing roles, technologies, and processes** create requirements to revise educational programs continually and to assist a wide variety of learners to adapt to these changes.
8. The **continuing explosion of health science knowledge, technologies, and capabilities** challenges our ability to access and use information and changes the economics of health care.

Third, we are creating a series of videos to bring some of these scenarios to life. The first video chronicles a day in the life of a clinical instructor.[6] The second illustrates possibilities for providing continuity of care across providers as it follows a patient from primary care to specialty care and surgery, and back to primary care.[7] (These videos are available from VUMC's Eskind Biomedical Library through inter-library loan.)

Mission, Goals, and Objectives

IPAC asked the planning groups to consider the information management function within the Medical Center. Given the changes we are experiencing and choosing, what is the mission for the information management function at VUMC? And what information management goals will best support building the VUMC of the future? What objectives must be met over the next five years to make good progress toward our goals?

Each planning group drafted a mission statement for the information management function within its domain. Note the distinction in this step: we wanted to create understanding of the mission of the information management *function within* each of the domains -- the groups were not asked to construct a mission statement for the *Department* of Information Management. At the same time, the planning groups were asked to identify key goals which would support the mission. The mission statements and goals were then combined across domains into a single statement of mission and a set of twelve goals. The next step was to identify measurable objectives to support each goal. As the groups began to suggest objectives, we continued to work in an iterative fashion on the mission and goal statements, ultimately simplifying our list to five key goals, each supported by a set of objectives.

Critical Functions

The power of an IAIMS is in its ability to integrate people, processes, and technology. Hardware and software are not sufficient to create IAIMS -- we must have *people* interconnected through their use of the IAIMS in their work processes.

IPAC asked the planning groups to identify what they believed to be the critical functions that would provide incentives for most people in the Medical Center to use the IAIMS on a regular basis. Their consensus was that implementation of a Medical Center-wide electronic mail system and a patient care information system will jointly cause most people to use the IAIMS regularly. This assertion assumes that we begin to use the electronic mail system to distribute

Table 2: Key Features of Scenarios

1. Faculty, staff, students, and patients are skilled in the use of available information technologies. Multi-media communications and computing are ubiquitous and their use is fully incorporated in routine processes of faculty, staff, students, and patients.
2. Faculty, staff, and students are able to access readily, integrate, and manipulate a wide variety of information types and sources, when and where needed.
3. We use many types of models, simulations, and experiential databanks to support decision making and process improvement.
4. We have high levels of collaboration and facilitated communication: among health care providers, researchers, learners, teachers, managers, patients, and other organizations. E-mail; interactive, multi-media, distributed conferencing; and scheduling and tracking systems are used to assist individual and group communications, meetings, and performance.
5. Organizational structures are flattened and timely operational decisions are made by front-line staff.
6. We use streamlined processes and support systems for the entire grant life-cycle and other educational and research activities.
7. We manage patient care across geographical locations using well-integrated systems for health records, cost control, care pathways, scheduling, decision support, monitoring, patient education, coordination of social services, and follow-up.
8. We have shifted to a paradigm of life-long, just-in-time, individualized learning, with support and incentives for faculty and staff development and redevelopment.

documents (e.g., invitations, agendas, minutes, memoranda, approvals) that have traditionally been distributed in paper format. It also assumes that the patient care information system includes direct entry of patient orders by our health care providers.

Categorized Project Catalog

IPAC wanted to come out of our planning process with a set and sequence of projects to move us toward our current vision for the future. Many of the projects we must choose among appear to have a primary impact on education, research, or patient care, although with further consideration, they can be seen to offer benefits across domains. Other projects address infrastructure and support issues affecting the entire Medical Center. The categories we choose can allow us to sort projects by type of effort required and type of benefit anticipated and to identify overlapping functions across domains.

Capabilities. In order to develop a catalog of projects, we first started by asking the domain committees to identify information management capabilities desired within each domain. The planning groups used their vision statements as a primary source, but also sought input from focus groups, rounds, and discussions with other ongoing groups within the existing organizational structure. They also utilized input provided to other planning processes in the Medical Center. In all, over 700 ideas were recorded from a wide variety of sources. There was significant overlap in the suggestions obtained from different sources.

Projects. We then developed a set of projects which would provide the desired capabilities. Each project was either identified with one of the domains (education, research, or patient care -- choosing the one to which it seemed most closely related) or it was placed in the domain of infrastructure and support projects.

Categories. As we worked with the project lists, we realized that we needed a consistent way to view the projects across domains and to distinguish among fundamentally different types of projects. Ultimately, we developed six categories for the education, research, and patient care projects, and seven for the infrastructure and support projects.

We chose the following categories for the projects directly supporting education, research, and patient care:

Access to information resources: some projects are primarily oriented to providing access to existing information resources, either at VUMC or external. (E.g., providing access to existing databases for results reporting; developing processes to encourage utilization of externally developed computer-based instructional materials; providing network access to bibliographic databases and full text resources as they become available.)

New integrative information resources: other projects are primarily concerned with the creation of new information resources which can then be integrated with existing resources. (E.g., developing a database of course information and materials in electronic format, accessible via the network; developing a database of local research resources; developing collaborative care pathways and new case management data resources across providers.)

Information technology-enabled changes in work processes: some projects will accompany significant work process changes under consideration at VUMC. (E.g., developing streamlined scheduling mechanisms for facilities, students, and instructors; supporting communication among investigators at multiple sites; developing new strategies for referral and payer communications.)

Development of new products: other projects will enable us to move in new directions with new products. (E.g., distance learning; telemedicine; ability to support billing and contracts management for all types of health care provided.)

Support for administrative/management/ leadership decision making: some projects primarily support people in their leadership, management, and/or administrative decision-making roles. (E.g., mechanisms to record and track learning experiences and outcomes; providing tools to support project planning and tracking; developing executive decision support reporting.)

New institutional definitional efforts, strategies, policies, processes: some projects involve making decisions and establishing directions for projects in the other categories. (E.g., defining institutional directions in educations; making recommendations for central support of specialized software and databases; developing recommendations for supporting non-clinical decision-making at various levels in the organization.)

Benefits of Categorization. Work within each category requires similar resources and methodologies. These similarities apply to planning, implementation, and longer-term support. In addition, the kinds of benefits to be obtained will be similar within each category, so that we may be able to adopt a standard approach for prospective cost and benefit assessment and ongoing impact evaluation within each category. By using the same set of categories across domains, it becomes clear that there are similar processes across domains (e.g., scheduling of students, scheduling of research assistants, scheduling of patients). It may be possible to create solutions in one domain with generic aspects that can then be used in another domain.

Priorities

IPAC asked the planning groups to recommend priorities among the projects. Each group was asked to consider four questions about each project: 1) To what extent would it enable us to do new things that we need to do *within their specific domain*? 2) To what extent would it improve the efficiency or reduce the cost of existing *domain-related* activities? 3) How quickly could it be implemented at VUMC, culturally? and 4) How important is it to VUMC overall -- to maintain quality and competitiveness *within their domain*?

In addition, for the patient care domain, we asked hospital and clinic management and supervisory staff to let us know which projects would be most beneficial for their own areas and to identify priority projects that might not be on our list.

Recommended Priorities. Looking across domains at the results of the assessment of overall importance of the projects, there was agreement that a subset of the projects could be recommended as having high priority for *all* domains. In addition, other projects were felt to have very high priority within a single domain. We expect that some of these projects will prove beneficial to the other domains, as well.

The following project areas were rated highly important for all three mission areas:

Providing universal network and internet access for faculty, staff, students, and others whose access to information resources through VUMC would be beneficial to VUMC;

Ensuring data security, confidentiality, and integrity;

Developing a computer-based patient record;

Providing improved decision support, planning, and coordination for the care of patients;

Providing coordinated information management project support to organizational units within VUMC.

Sequence Reflecting Dependencies

The final step in developing VUMC's plan was to create a "straw man" Gantt chart to show how we might implement the desired functionality across domains over a 5-year time frame. The proposed sequence responds to priorities and supports institutional decisions regarding fundamental changes. It also provides required infrastructure and respects technical, resource, and data dependencies.

HOW THE PLAN WILL BE USED

VUMC's approach to IAIMS development has been based on a model of parallel implementation and planning. The newly developed plan will assist us to move forward in VUMC's current environment of

fiscal contraction. First, the plan will be a road map to leverage ongoing investments. It assists us to see where marginal investments may yield major institutional benefits. The articulation of dependencies in the project sequence also clarifies why we cannot do some things immediately. This understanding assists us to postpone some expenditures we might otherwise be persuaded to make in the near term.

Relationship to Institutional Strategic Direction

The information management planning process dovetails with other institutional planning in the patient care area. VUMC's hospital and clinics are engaged in an ongoing collaborative organization design process. VUMC has also established a set of task forces to examine our response to the managed care environment. We are also in the process of exploring opportunities for partnership with another hospital in Nashville. Thus, VUMC is preparing for significant cultural and process change in the patient care arena. We will see revolutionary changes in how we provide patient care. The changes involve all aspects of our organizational systems, not just the information systems.

We are not currently prepared for such radical change in education and research. In these areas, we will pilot new approaches, using information technology to enhance instruction, learning, and research. Simultaneously, the institution will launch efforts to consider new strategic directions as we also grapple with current funding challenges and think through opportunities for new products which may be successful in the current environment.

Communication

The information management plan will evolve through iterative testing and modification. During the latter half of 1995, we will focus on communication, open discussion, and refinement of the plan. Distribution of IPAC's final report (even without its appendices) will be limited. Readers will be those who can genefit from the detail in managing their own change processes. However, we expect to produce a brochure for wide-spread distribution to bring faculty, staff, and students up to speed on the overall planning process and to serve as background for their participation in consensus-building discussions.

Our vision videos will be used to stimulate discussion. Videos can be invaluable in stimulating individuals and groups to think creatively about how information technologies might assist them. Our experience is that videos are superior to prototype systems for eliciting feedback in high-level planning. Videos can be used to suggest a wide variety of functions without having to develop complete prototypes.[8] Also, we believe there is less pressure to deliver rapidly features that are illustrated in a video.

IPAC is starting its initial planning for a retreat involving key leaders throughout the Medical Center. This retreat will provide an opportunity to explore how participants can incorporate additional aspects of the information management plan into their own change efforts -- and, as always, to interact in a way that leads to refinement of VUMC's IAIMS plan.

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